part found free in the fluid, the epithelium being studded with other bacterial forms.

Persons who have not been in the habit of examining dried saliva-films will probably be surprised at the number and variety of the organisms which are, more or less, constantly to be found in the mouth; and especially at the number of spirilla with which the fluid is generally crowded.

The alvine discharges in cholera sometimes swarm with precisely similar spiral organisms, and, indeed, as has long been known, the fluid exuded into the intestines in this disease is peculiarly suitable for the growth of these and allied microbes. But, so far as my own experience—dating from 1869—of the microscopic examination of such a fluid goes, all the microphytes ordinarily found in it are likewise to be found, to a greater or less extent, in the secretions of the mouth and fauces of unaffected persons. And with reference to the comma-like Bacilli found in cholera, to which such virulent properties have been ascribed, I shall continue to regard them as identical in their nature with those ordinarily present in the saliva until it has been clearly demonstrated that they are physiologically different.

Pathological Laboratory, Netley, September 1

FORESTS IN COBURG, GERMANY, AND RUSSIA

A BLUE-BOOK under the title of "Reports by Her Majesty's Representatives abroad on the Cultivation of Woods and Forests in the Countries in which they reside," has just been published by Messrs. Harrison & Sons. These Reports are of an extremely interesting character, and we gladly draw attention to them, appearing as they do at an opportune moment before the close of the Forestry Exhibition at Edinburgh.

The Reports come from Coburg and Gotha, Germany, Norway, Russia, and Sweden, and in the form of an appendix is a *précis* by Dr. Lyons, M.P., of the Reports on Forestry of the United States Department of Agriculture. In each one of these Reports much valuable information is given and information of a very varied character. Thus in the first we are told that the forests in Gotha consist of 85 per cent. of pine and 15 per cent. of other wood. The principal timber-trees are pine and beech, whereas the remaining sorts of wood, namely Scotch fir, spruce, larch, oak, maple, ash, birch, and elm are found only in small quantities or mixed with the other species. The period during which the different woods are gradually brought into use is such that pine forests and mixed forests shall yield as large an amount as possible of saleable timber, whilst in the beech woods the greatest amount of wood as fuel is sought without allowing the trees to attain an age at which they would no longer pay the interest on the value of the soil. Pine and beech wood in higher situations are, according to these principles, usually cultivated and worked in cycles of one hundred years, while spruce on the lower heights and in the plains are worked on an eighty years' cycle. The woods for protection on the high grounds are subject to especial treatment, as no clear fellings take place, and care is taken to leave standing groups of foliage trees equally distributed over the whole surface. The usual rules followed are: early felling of the trees in a cycle of eighty years, leaving occasional large shelter trees, and utilising the undergrowth for purposes of renewal. The administration of the Domain forests in the Duchy of Coburg is carried on on scientific principles, and consists of regular felling at stated periods over certain areas; pine timber trees are usually cut every ninety years, while oak, ash, beech, birch, &c., are not cut till after 120 years' growth.

The Report on the general administration of Prussian State Forests treats of their organisation, expenditure, and results, and points to the desirability of introducing others than indigenous trees into the forests. On the subject of education in forestry it is stated that the School of Forestry at Eberswalde completed in June 1880 the fiftieth year of its existence, and had at that period in all nearly 1600 pupils. There is also a School of Forestry at Münden, and the half-yearly attendance at both schools showed in 1878 an average of 148 pupils, whereas in 1880 the number had increased to 210. The attendance was therefore largely on the increase, and it was then proposed to give voluntary education in these matters to the "Jäger Bataillonen" of the army. This plan has, according to latest accounts, been attended with so much success that the education has become obligatory, and forms a regular portion of their service.

From Russia a very elaborate Report treats, amongst other things, of the various kinds of trees found in Russia, with notes on their distribution, and some interesting facts on the consumption of wood and the uses to which it is put, showing that house and ship building consume a very large proportion, and that the minor industries when put together form a not unimportant total. After showing the extensive destruction of forests that has been going on in different parts of Russia for some years past, the Report considers the question of plantations along railways, the object of which is to protect the track from snowdrifts, and a list of the best trees and shrubs for this purpose is given. On the subject of tree-planting on the steppes of South Russia, it is stated that Count Kisseleff, when travelling through several provinces in 1840, found, much to his surprise, amongst the German colonists not only good kitchen gardens but also flourishing plantations of forest trees. The colonists had been obliged on every plot of land to plant a certain number of trees. The first experiences, however, were so severe that many of the colonists preferred to return to Germany; those that remained were forced to plant their allotments with trees which, with infinite trouble, they succeeded in doing, and these plantations are now a great ornament to the steppes, and from a climatic as well as an agricultural point of view have been of great importance to the colonists, and have laid the foundation of the planting which is now carried out on the steppes in a scientific manner. A forestry school was established, but closed in 1866, and the allowances for planting which had been granted were reduced to a minimum. Since that, however, matters have been put on a more satisfactory footing, and planting is conducted in a systematic manner.

STONE HATCHETS IN CHINA

LITTLE has yet been done to illustrate the Stone Age in China, and this is very likely to be true for some time to come from the fact that the people of the country worked in metals four thousand years ago.

To begin with the Han dynasty, B.C. 206 to A.D. 220, one chief source of revenue was iron in those days, and Shansi had grown rich and powerful because of her iron foundries. The correct Confucianists objected to the spirit of gain-seeking which they saw showing itself in the expansion of trade. In the reign of Chauti, B.C. 80, a book was written on the salt and iron duties, which was a record of the views then maintained by the purists of the Confucian school in contrast with those of the political economists of that day. The advantages of the encouragement of trade were detailed in full, and the sympathy of the modern reader goes with the economists, who saw that the strength and prosperity of the country must be increased by developing her resources. The country was then old, and the stone hatchet period must be sought much earlier. The same state of things existed in the time of Kwan chung, B.C. 700. Living before Confucius,

©1884 Nature Publishing Group

he could, as Minister of the Tsi kingdom, encourage trade without opposition from the literary class. His book speaks of the trade then existing between the different parts of China and the outside countries, and mentions gold as a product of the Ju and Han Rivers. Pearls come from the south; jade comes from Tartary; white ring plates come from the Kwun lun Mountain. Money was threefold. Pearls and jade were money of the first class. Gold was money of the second class. Knife money and cloth were money of the third class. This being the state of things at the beginning of the seventh century before Christ, the stone hatchet period must be sought farther back. It is said of the Emperor Cheng Tang, B.C. 1766, that he coined gold; and of the Emperor Shun, B.C. 2255, that he hid gold in the earth to check the covetous spirit of the people. In the book of history is recorded the tribute which was offered to the Emperor from various parts of China in the time of Yü, B.C. 2205. All the common metals were included among the articles offered.

Recently a stone hatchet was found near Kalgan in a mound forty feet high. The mound belongs to a large collection of graves, large and small, about seven miles east of the city Yü cheu, and 110 miles west of Pekin. An ancient wall, nearly round, twenty feet high and about eight miles in circuit, is still in existence there. The mound in which the hatchet was found is in the line of this wall—that is, the wall runs north-west and south-east from it. Hence the wall-builders did not regard the mound as sacred, for it would not in that case have been made to serve the purpose of a wall to their city on the south-west side.

There is another large mound known as the grave of Taì wang. It is a little to the east of the centre of the inclosed space once a city, and the principal road runs through the city by this mound from east to west. Rev. Mark Williams of Kalgan, who found the hatchet, and was the first foreigner to draw attention to the old city, was struck with the general resemblance of the mounds, the wall, and the hatchet to what he is familiar with in Ohio. So close was the similarity that it seemed to him to require that the same class of persons who made the one should have made the other.

A Chinese archæological work of the seventeenth century, "Fang yü kì yau," mentions the city but not the mounds. The city, it says, was built in the reign of Han kau tsu, B.C. 206 to 194. Han kau tsu gave to his brother Hì the title and principality of Taì wang, and this was his residential city. The traces remain (it is added in this book) of nine gates. A river from the north enters the wall in the west, proceeds to the south-east, and from thence flows to the Tsz River. This prince was attacked by the Hìung Nu Tartars, and they must have taken the city, for he fled to his brother in Shensi, and was degraded to a lower title of nobility for cowardice shown on this occasion. Before this, in the interval between the fall of the Tsin dynasty and the establishment of the Han, there had been two other persons who had been styled Taì wang. Hìang yü, who took the capital of the Tsin dynasty and burnt its palaces, resolved to restore the feudal system and made several kings.

Chau hìe was one of these, but he removed shortly after to a different locality. After this there was another occupant of this principality, Chen yü. He was appointed by the ruler of Chau. But soon Lìeu pang subdued all China, and everything was changed. Besides these persons there is mentioned in the year B.C. 457 another Taì wang. The account which speaks of him is in the "Shìh kì," chapter xliii., where the author is relating the fortunes of the house of Chau. The elder sister of the Prince of Chau was the wife of Taì wang. While brother and sister were in mourning for their father, the former invited Taì wang, his brother-in-law, to a feast, and directed the cooks to attack and kill him with their copper ladles, which they had first used in presenting food to him. The widow afterwards committed suicide with her hair-pin. The object of the ruler of Chau in the murder was to obtain the dominions of the Taì wang for himself. The people of the locality, adds the historian, pitied the unhappy queen, and after her death named the mountain where this event took place "the hill of the suicide with a hair-pin," *mo kì chï shan*. When the Prince of Chau had effected the murder, another work adds, he sent a messenger to his sister to say, "To feel indifference for a husband's death because it was caused by a brother would not be kindness. To hate a brother for a husband's death would not be right." After hearing this speech she committed suicide, and the envoy at once followed her example and put an end to himself. The feelings of the people were much stirred by these events, and it seems likely that one of the large mounds would be raised to the assassinated Taì wang. This however is not certain, and the number, names, and dates of other persons who bore the title are now beyond the reach of investigation.

Several pieces of broken pottery were found by Mr. Williams in the neighbourhood of the mound, and their pattern is different from modern crockery ware. The small mounds are in groups chiefly outside the wall, and seem to be all placed irregularly. The hatchet is about five inches long, and is made of a black stone not heavy when held in the hand. It resembles in shape those preserved in Ohio museums.

On the whole, as the reader of this account will agree, the highest of the two large mounds is most likely the tomb of the prince assassinated, in the manner here described, in the year B.C. 457. The village in the centre. and the large mound second in size near it, popularly called Taì wang, probably indicate that a later personage was buried there.

I should add to this statement that there is in Kwan chung a passage in the twenty-fourth chapter which is as follows:—"Hwan kung, ruler of Tsi, asked Kwan chung, 'What produce is there in the Taì country?' The philosopher replied, 'White fox-skins. They are, however, dear to buy. They appear in the sixth month, when the yang principle changes to yìn. If you, the ruler of Tsi, offer to buy them at a high price, the people of the Taì kingdom will at once, from the hope of gain, go out in force to hunt for them. Tsi keeps its gold and waits. While the Taì people are hunting in the wilds and off their guard, their enemies on the north, the Lai ti, will attack them, and in this case the Taì country will fall to Tsi.' The ruler of Tsi adopted this plan for obtaining possession of Taì, and sent envoys with money to negotiate for white fox-skins. The King of Taì, hearing what they desired, said to his chief councillor, 'The money offered to us by Tsi is the very thing for want of which we are not equal to the Lai ti people. It is fortunate that this proposal is made to us.' He then ordered his people to go out hunting for white fox-skins. During twenty-four months they searched without finding any. The Lai ti people learned that the Taì kingdom was not in a state of defence, and attacked its northern frontier. The Taì wang in great fear gathered his troops and posted them above a defile called the valley of Taì. The invasion proceeded, and the Taì wang took his soldiers with him and submitted to Tsi. So in less than three years Taì submitted to Tsi without its being necessary to spend any money on the purchase of the skins which Kwan chung praised."

This passage must by fair criticism be ascribed not to Kwan chung himself but to some unknown author of the age of the contending States three or four centuries later. There was no Taì kingdom in the time of Kwan chung, and invention of this sort was common in the period of the contending States. Kwan chung had ascribed to him many expedients of statecraft which never occurred to him, and this of the fox-skins was amongst them.

JOSEPH EDKINS

©1884 Nature Publishing Group